



Our mission is to create mindfulness around food waste and the recycling process via composting and soil education.

What do we do?

Building Mindful Waste Management



Food Scraps Pick-up Service



Business - \$25/month 18g or
\$50/month 32g roll cart

Residential - \$15/month

Community Food Scraps Bins -
\$Free

Bicycle Powered!

Education Workshops

Elementary School, High Schools,
Alternative schools, MSU & Drury,
Community Gardens (SCG)



Community Food Scraps Bins

FREE



1st Bin location- Otts Pasta @ Cherry and Pickwick

2nd Bin location- C-Street : in progress

3rd Bin location- Downtown : in progress

No Financial Barriers Access!

Private business property needed

Zero Waste Events

Goal is to guide other groups to becoming more sustainable.

James River Basin, Ozark
Greenways, Springfield
Community Gardens.



Consultation Services



Why is composting important?

—

How long does it take
for a Lettuce head to
decompose in a
Landfill?

A photograph of a fresh head of green lettuce, likely romaine, resting on a wooden cutting board. The lettuce is vibrant green with visible veins. The cutting board is made of light-colored wood and is placed on a rustic, weathered wooden surface. A few loose lettuce leaves are scattered to the right of the head. The text is overlaid on the left side of the image.

25 YEARS!

Backyard composting
of a lettuce head takes
1-2 weeks.



Composting Protects the Climate

Food scraps in landfills generate methane, a greenhouse gas with a global warming potential 84x more potent than CO_2 in the short term.

Incinerators also emit climate pollutants

...but when converted into compost and applied to the land, compost sequesters carbon.

One research project found that $\frac{1}{2}$ inch of compost applied to rangeland sequestered the equivalent of 1 metric ton of CO_2e /hectare over three years.

This level of sequestration on half of California's rangeland would offset 42 million metric tons of CO_2e , which is equal to the annual greenhouse emissions from California's commercial and residential energy sectors.

SOURCES:

Gordon Myhre, Drew Shindell, et al. Anthropogenic & Natural Radiative Forcing, Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, 2013, p. 714.
"Can Land Management Enhance Soil Carbon Sequestration?" Marin Carbon Project web site, accessed April 2016.
Rebecca Ryan and Winifred L. Snow. "Effects of organic matter amendments on soil primary productivity and greenhouse gas emissions in annual grasslands." Ecological Applications (Ecological Society of America), 1 January 2013, 22:44-59. doi:10.1890/1051-0761(2012)22[44]2[0]<013;1;1-0
Brenda Platt, Nery Garibay, Craig Cohen, and Sally Brown. The State of Composting in the U.S.: What, Why, Where, & How. Institute for Local Self-Reliance (ILSR), June 2015.
Brenda Platt, Eric Lombard, and David Caplan. Stop Treating the Climate. Institute for Local Self-Reliance (ILSR), 2008.

ILSR INSTITUTE FOR
Local Self-Reliance

To learn more, visit: ilser.org/compost-impacts

- Food in Landfill creates Methane, 84x more potent than CO_2
- CARBON SEQUESTRATION is a solution to Global warming
- Marin Carbon Project in California

We have a Waste Problem

Springfield produces 660 tons of waste per day.

12% of that is food waste.

Equivalent to 40 cars per day going to the landfill!

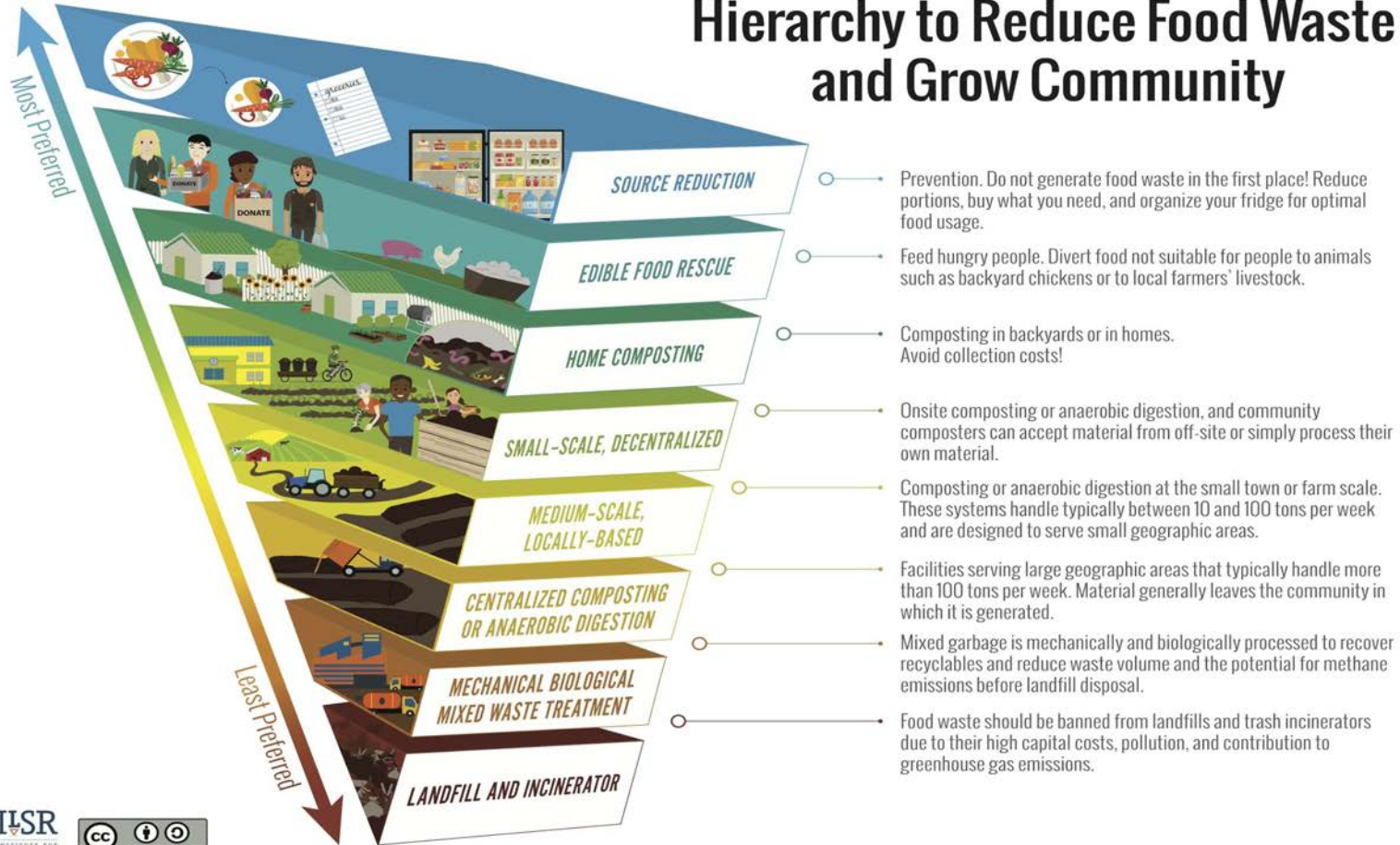


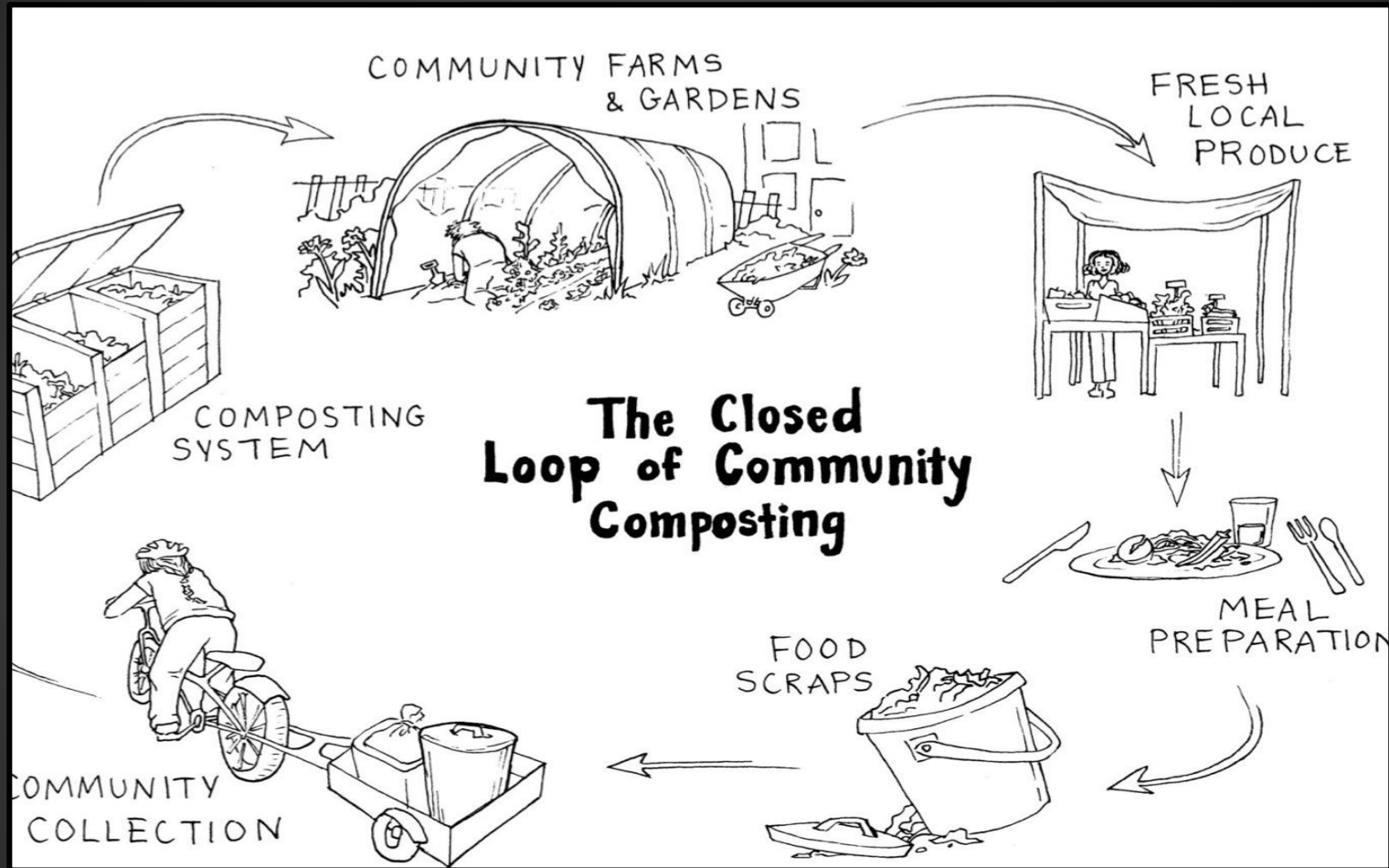
**On a National Level
51% of waste is
compostable and 21%
of that is FOOD
SCRAPS!**



Composting can make a difference and it starts with you.

Hierarchy to Reduce Food Waste and Grow Community





We have to Close the Food Loop, if we want a Sustainable Future

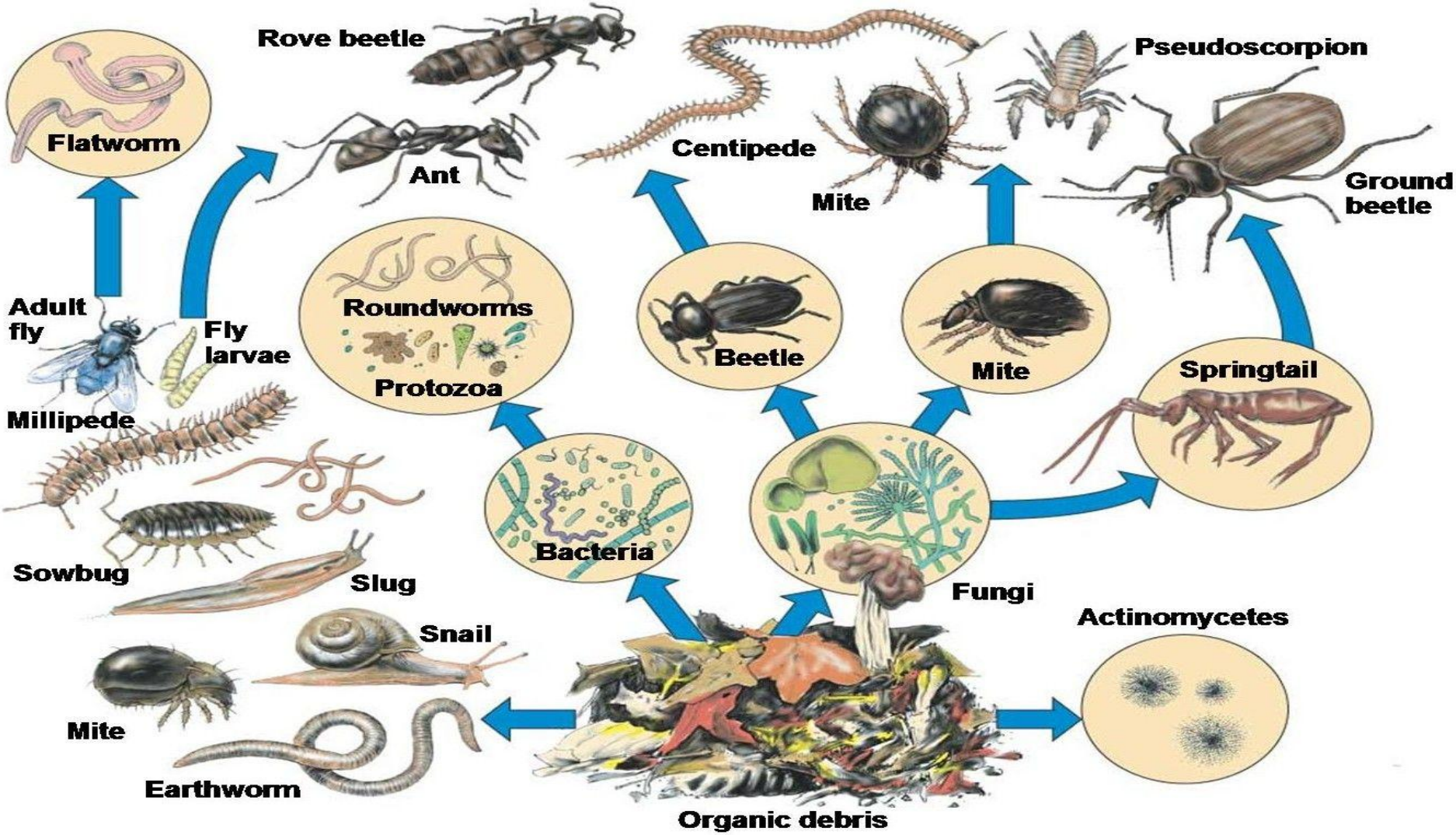
What is Compost?

Compost is the decomposition of organic matter in an aerobic (oxygen) setting. It is the natural recycling process that gives life and energy back to the Earth.

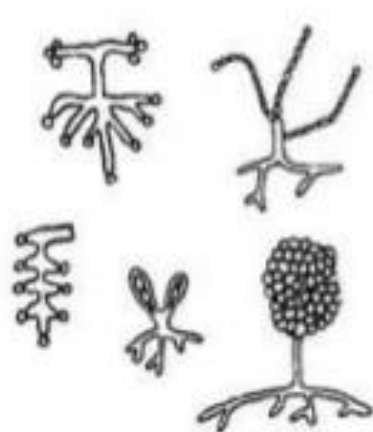




Compost is ALIVE

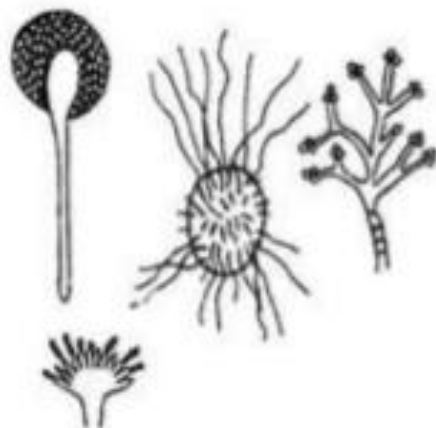


COMPOST MICROORGANISMS MAGNIFIED 1,000 TIMES



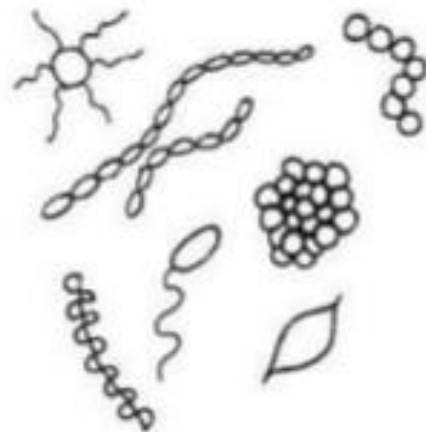
Actinomycetes

100 thousand - 100 million
per gram of compost



Fungi

10 thousand - 1 million
per gram of compost



Bacteria

100 million - 1 billion
per gram of compost

Illustration from Saba Cooperative

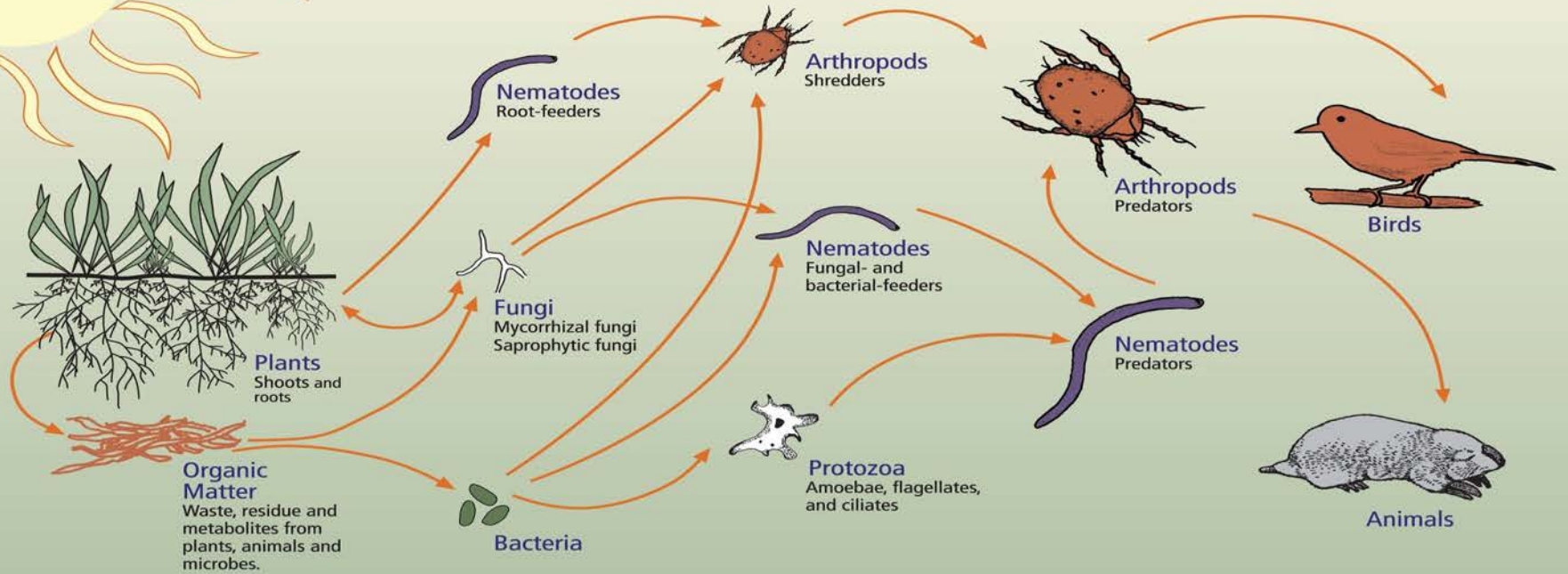
Microorganisms have requirements:

1. Carbon for energy – microorganisms oxidize carbon
2. Nitrogen for growth and reproduction
3. Oxygen to aid in decomposition and oxidation of carbon
4. Water to maintain activity without causing anaerobic condition





The Soil Food Web



First trophic level:
Photosynthesizers

Second trophic level:
Decomposers
Mutualists
Pathogens, Parasites
Root-feeders

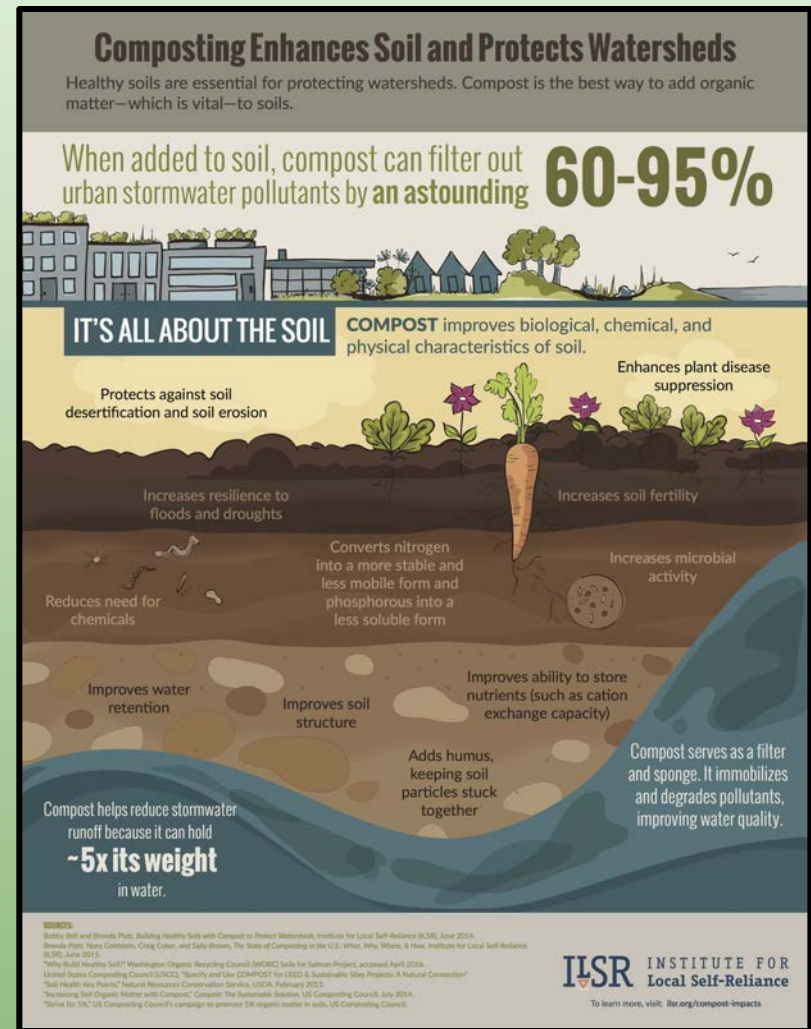
Third trophic level:
Shredders
Predators
Grazers

Fourth trophic level:
Higher level predators

Fifth and higher trophic levels:
Higher level predators

- ❖ **Improves heavy clay soils**
- ❖ **Binding soil particles also helps improve aeration, root penetration and water infiltration and reduces crusting of the soil surface.**
- ❖ **In sandy soils, additional organic matter helps with nutrient and water retention.**
- ❖ **Compost increases the activity of soil microorganisms**

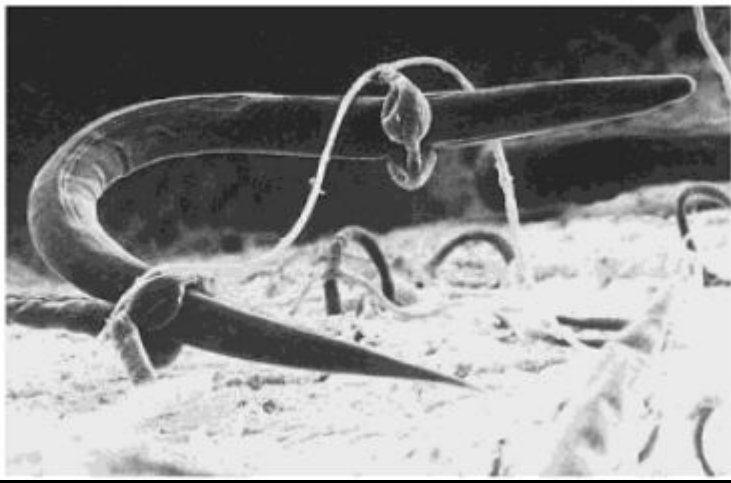
"The following comes from the [Institute for Local Self-Reliance \(www.ilsr.org\)](http://www.ilsr.org), a national nonprofit organization working to strengthen local economies, and redirect waste into local recycling, composting, and reuse industries. It is reprinted here with permission."



A foraging, root-eating nematode, trapped by a fungal hypha. Courtesy

H. H. Triantaphyllou.

Reprinted, with permission,
from <http://www.apsnet.org/>,
American Phytopathological
Society, St. Paul, Minnesota.



**Compost adds fungal hyphae
along with other beneficials
to the soil to help fight
against root feeding
nematodes, disease, and
pests.**

**Synthetic fertilizers and over
working the soils kill the
microorganisms breaking
the natural defense shields
for plants and soil life.**



With no fungal hyphae barring
the way, a nematode penetrates a
tomato root to feed. Photograph by
William Weryin and Richard Sayre,
USDA-ARS.

How to Build a Composting Area



Air

Add oxygen to reduce odours and break down materials faster. Simply stir the pile or use an aerated pipe.

Greens

About half of the pile should be nitrogen-rich 'greens' like fresh garden waste, grass clippings or fruit and vegetables. Avoid weed seeds.

Browns

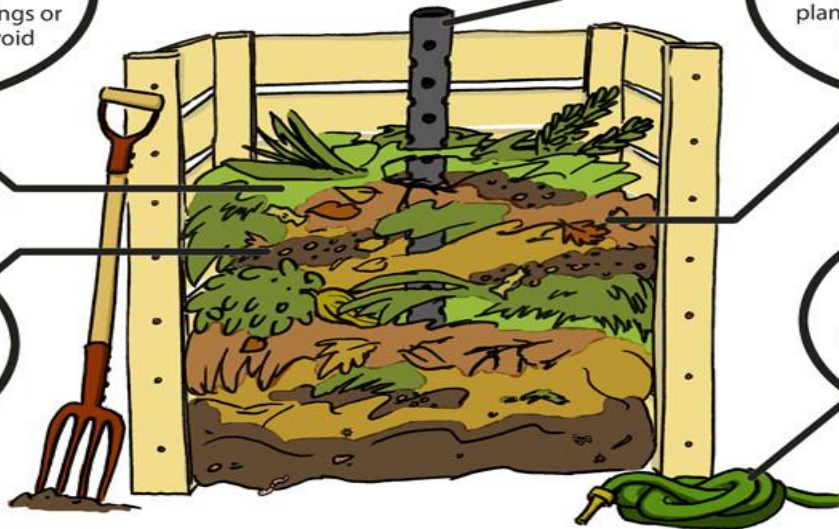
About half of the pile should be carbon-rich 'browns' like dried plants, dried leaves, woodchips or straw. You can store extra nearby.

Soil

Include small amounts of soil to reduce odours and add beneficial microbes.

Moisture

Add moisture during hot, dry weather to help materials break down. Keep your pile as moist as a damp sponge.



Materials Needed for a Healthy Compost Pile

NITROGEN = GREEN MATERIALS



fresh grass clippings, green plant material, food scraps, used coffee grounds, living materials

CARBON = BROWN MATERIALS



leaves, mulch, dried plant material, cardboard, paper

AIR = INVISIBLE MATERIALS

compost needs fresh air just like we do.
We add air to compost by turning and lifting it.



WATER = LIQUID MATERIAL



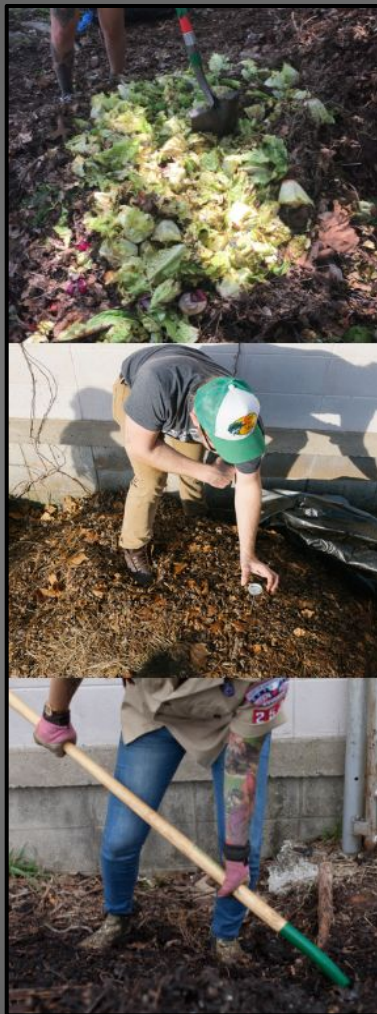
every living thing needs water - 50% moisture content

Materials Needed to Start Composting at Home



- Pallets- Recycled and Heat Treated
- Chicken Wire
- Cardboard
- Mulch, paper, and/or leaves (carbon)
- Pitch Fork
- Compost Thermometer- optional but recommended
- Compost Bin/bucket
- Countertop compost container
- Friendly reminder on your fridge to check and turn your compost pile

- ★ 4x4x4
- ★ Location
- ★ Cardboard barrier
- ★ Materials cut to 6" or smaller
- ★ Layering 4-8" with C and N, can add soil
- ★ Watering
- ★ Regular Turning
- ★ Check Temperature



BUILDING A PROPER COMPOST PILE

MULCH: wood chips, straw
4-6" of Cured Compost, Topsoil or Garden Soil
BROWNS
GREENS
BROWNS
GREENS: veggie scraps, manure, grass clippings, worm casings, hay, compost, coffee grounds
BROWNS: straw, fall leaves, shredded paper, pine needles, wood chips
Wet sheets of Cardboard or Newspaper
Soil Amendments: gypsum, peat moss, bone meal, blood meal, coconut coir, rock dust, etc.

WHAT A HAPPY COMPOST NEEDS

4 x 4 x 4 size compost container
 Cut materials into 6 inches or smaller
 A cardboard barrier
 Layer every 4-8" with Carbon & Nitrogen, can add soil
 Water
 Regular turning

Pile Building: Important Parameters

- ✓ Bulk Density
- ✓ Pile Size
- ✓ Pile Shape



A participant of the Neighborhood Soil Rebuilders Master Composter program puts the hand-squeeze moisture test to use.
Source: Institute for Local Self-Reliance.



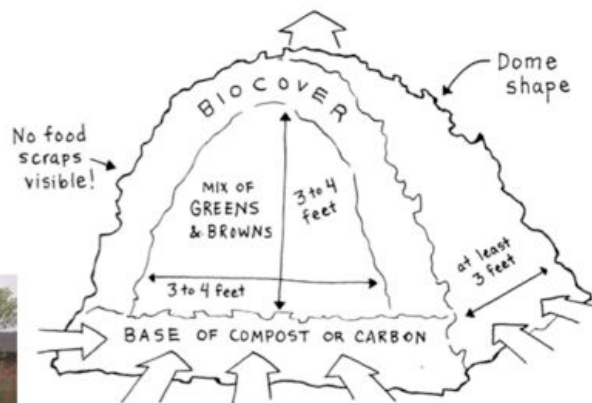
In a properly built aerobic compost pile, air circulates much like in a house with a hot fireplace and a chimney. As the center of the pile heats up, hot air rises from the middle, which pulls cool air into the pile.

Source: Institute for Local Self-Reliance

The Science & Art of Composting

✓ Building your composting pile

- The basic steps
- Achieve a thorough initial mix



A cross-section of a well-built composting pile.

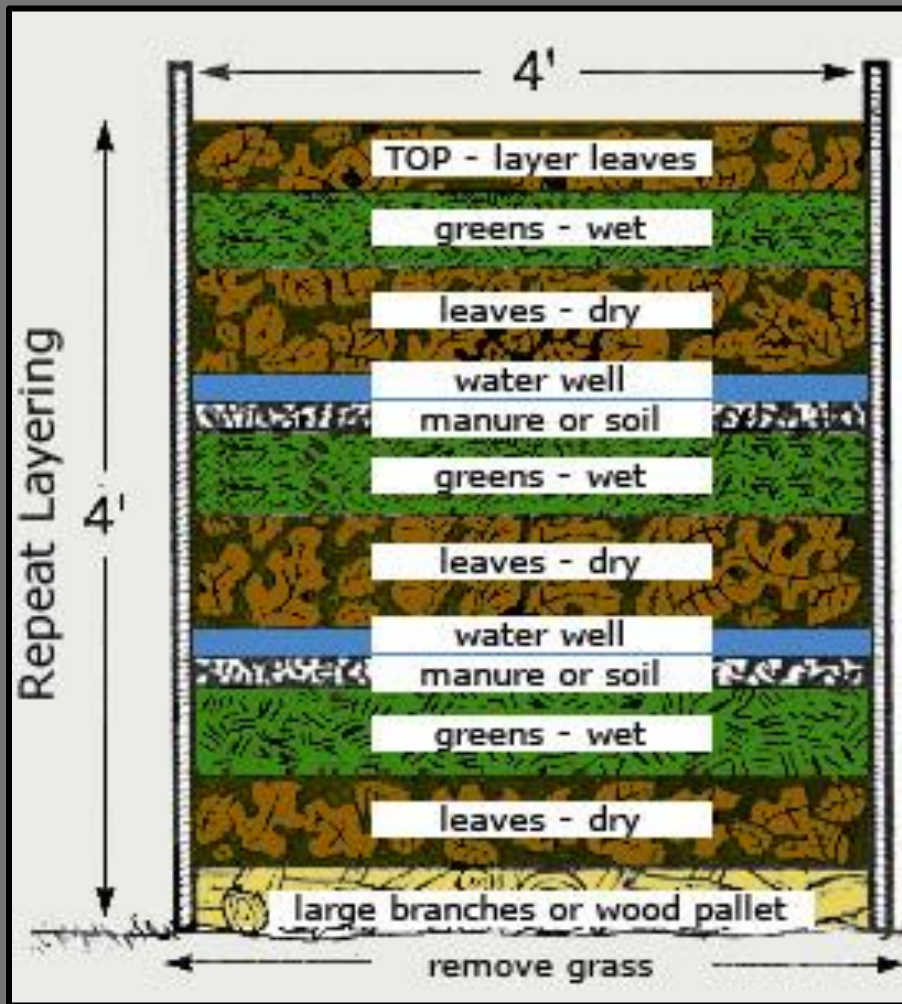
Source: Institute for Local Self-Reliance

The NYC Compost Project hosted by Earth Matter NY is located on Governors Island and composts food scraps from the broader NYC community. Source: Earth Matter.



INSTITUTE FOR
Local Self-Reliance

Neighborhood
Soil Rebuilders
COMPOSTER TRAINING PROGRAM



50% moisture



GREEN	BROWN
Aged Chicken Manure 7 : 1	Leaves (v important) 60-80 : 1
Food Scraps 17 : 1	Straw/hay 90 : 1
Veg Scraps 25 : 1	Sawdust 500 : 1
Coffee 25 : 1	Woody chips 700 : 1
Grass Clippings (Fresh) 25 : 1	Shredded Newspaper 175:1
Fresh weeds 20 : 1	Nut shells 35 : 1
Fruit Waste 30 : 1	Pine Needles 80 : 1
Rotted Manure 20 : 1	Corn Stalks 60 : 1
Humus (soil) 10 : 1	
Seaweed 19 : 1	
General Garden waste 30 : 1	





It's great to use
recycled materials.



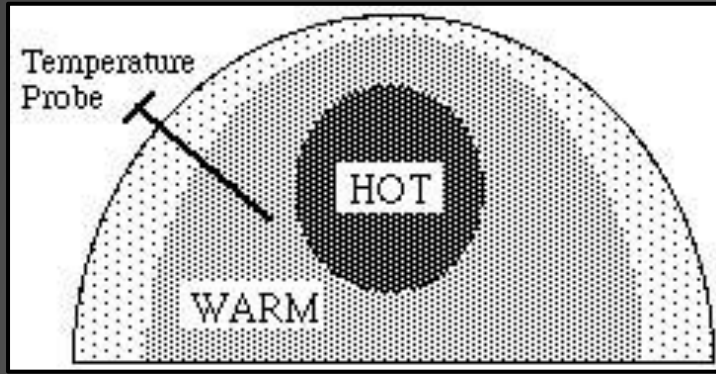
Not Recommended, Why?





Air
Move-
ment
Is
Key!!



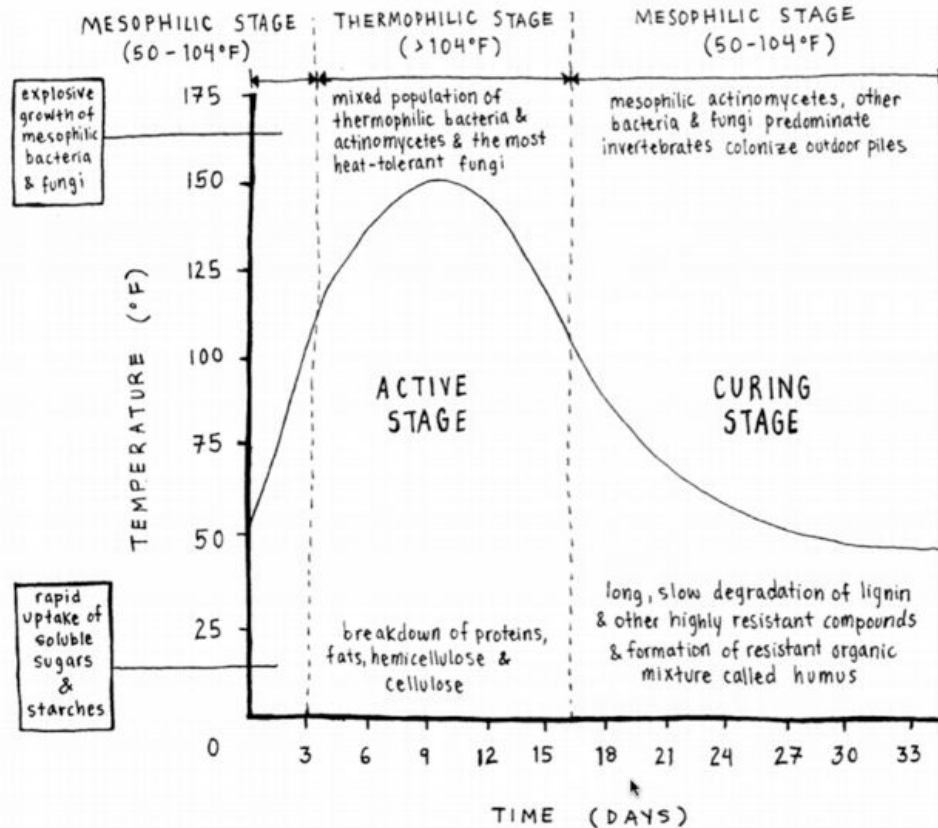


- Check Temp in three different locations
- Check Often- it's fun
- ReoTemp Compost thermometer- Amazon \$20

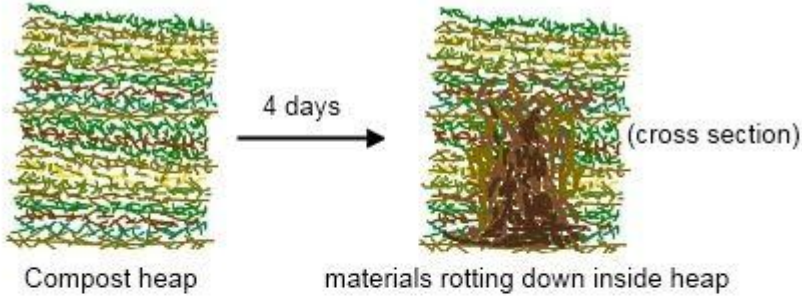


135-160 degrees F
3-5 days

Three Phases of Thermophilic Composting

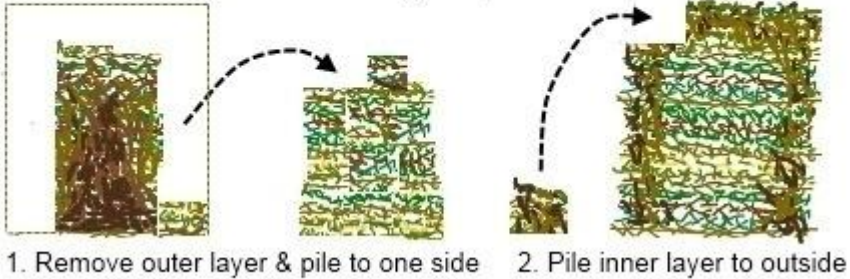


The Three Phases of Thermophilic Composting. Illustration adapted with permission from Nancy Trautman and Marianne Krasny's *Composting in the Classroom: Scientific Inquiry for High School Students* (1997).



Day 7 & Day 9

Turning Compost



- Turning required for hot compost
- Turning adds oxygen and fuels decomposition
- Finish product is healthier and available sooner
- Turn once a week if you can or every other week
- Allows for you to check on materials in pile and fix things if needed



Aerated Static Pile

- Large amount of materials
- Farms
- No turning needed
- More costly up front
- Electricity needed





Windrow Style Composting: Used for bigger amounts of materials and farm settings



Good setup for Farms BUT-- Needs to be turned often to incorporate oxygen.
Concrete can have chemicals that leach into compost over time.





Making Compost Cool Again is Very Simple



- ❖ Always cover food scraps with carbon and a biocover or tarp!
 - Keeps unwanted bugs and animals out
- ❖ Keeping the pile at the right temperatures
 - Nothing above 160 degrees
 - Starts killing good bacteria and N loss
 - 131-160 for 3-5 days
 - Best temp to kill seeds, and diseases
 - Insures healthy compost

**Don't forget to make
time to TURN your pile
& Check Moisture**

Diagnosing **Problems** and Knowing the **Solutions**

Problems

- The pile has a bad odor.
- No composting seems to be taking place
- Not hot enough but moist enough.
- Moist enough and smells fine but not enough decomposition. . .

Solutions

- Pile may be too wet, too tight or too much Nitrogen. Turn pile and add dry carbon.
- Moisten the pile while turning and add Nitrogen.
- Pile maybe too small and not enough Nitrogen
- Not enough Nitrogen to fuel the decomposition. Feed pile fresh green material

Vermicompost

A close-up photograph of a person's hands holding a large, dark, moist ball of vermicompost. The ball is covered in many red worms, which are visible on the surface. The background is slightly blurred, showing a person's legs and a black shoe.

Need Red Wigglers

Can not feed acid or
citrus

Temperature

Air and room to
move

Bedding material





Bokashi Composting

- Indoor composting
- Fermentation
- Drain off liquid
- Can compost everything- including meats, dairy, bones
- Pricy
- Has a capacity
- Still need to compost leftovers

Application

- Weed suppressor
- 1-2 inch application
- Use CURED compost
- Used as a Mulch





Happy Composting!!

<https://www.youtube.com/watch?v=bqDQD8cvO5Y>

- Support Composting!



www.springfieldcompostcollective.org
sgfcompostcollective@gmail.com

